

Applicant : Kenichiro Kobayashi et al.
Appln. No. : 10/737,336
Page : 7

RESPONSE

Claims 1-17 are pending in the present application. Reconsideration is respectfully requested for the following reasons.

Claims 1-13 have been rejected as being unpatentable over Japanese Application Publication No. 07-110216 (hereinafter referred to as "Hiyoshi") in view of U.S. Patent No. 6,262,818 to Cuche et al. and U.S. Patent No. 3,739,697 to Miyagawa. The requirements for making a *prima facie* case of obviousness are described in MPEP §2143 as follows:

In order to establish a *prima facie* case of obviousness, three criteria must be met. M.P.E.P. § 706.02(j). Firstly, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Secondly, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Thirdly, the prior art reference (or references) must teach or suggest all the claim limitations. *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

MPEP §2143.01 provides further guidance as to what is necessary in showing that there was motivation known in the prior art to modify a reference teaching. Specifically, MPEP §2143.01 states:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art. *In re Fritch*, 23 USPQ 2d 1780, 1783 (Fed. Cir. 1992); M.P.E.P. §2142. Applicants respectfully assert that the Examiner has not yet met the Examiner's burden of establishing a *prima facie* case of

Applicant : Kenichiro Kobayashi et al.
Appl. No. : 10/737,336
Page : 8

obviousness with respect to the rejected claims. Consequently, the Examiner's rejection of the subject claims is inappropriate, and should be withdrawn.

In regard to the first criterion of obviousness, there is no suggestion or motivation, either in the references themselves or to the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings. According to the Office Action:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Cuche et al. in the Hiyoshi system in order to build a computed video animation and/or in order to measure a deformation of the object and/or a movement of the object and/or a modification of the optical properties of the object (Cuche et al., col. 25, lines 61-67 and col. 26, lines 1-4).

However, there is no suggestion or motivation for making the combination as set forth in the Office Action.

Hiyoshi discloses a method and instrument for measuring vertical and lateral movement of a speckle pattern utilizing laser light. According to Hiyoshi, a laser oscillator 4 is used to radiate a measured object 1, thereby creating a speckle pattern 3. The speckle pattern 3 is then measured using a CCD camera 5. In contrast, the Cuche et al. '818 patent is drawn solely to holography.

In holography of the Cuche et al. '818 patent, an object is irradiated with laser beams having a differing phase (produced by causing interference between two laser beams in which the waveforms of the laser emission wavelengths are slightly temporally divergent), and capturing an image of the interference fringe thereof. In contrast, a granular speck pattern of Hiyoshi is generated spatially by irradiating an object with a single laser beam such that the laser beam is reflected irregularly depending on the roughness of the object surface.

Therefore, the Cuche et al. '818 patent deals with a holographic image in which a laser beam is widened into a plane and emitted onto an object, whereas in the case of a granular speck pattern of Hiyoshi, the object is irradiated with a single beam. Accordingly, holography deals with laser irradiation plane information, and a granular speck pattern deals with point information. In holography, the object is irradiated with a laser beam (plane) having a phase which is offset in relation to a laser radiation beam (plane), and a holographic image is

Applicant : Kenichiro Kobayashi et al.
Appln. No. : 10/737,336
Page : 9

obtained by causing the reflection beam (plane) of the laser beam to interfere with the laser radiation beam (not the laser beam that is emitted onto the object). Conversely, a granular speck pattern is generated spatially when the laser beam (point) that is emitted onto the object is reflected irregularly depending on the roughness of the object surface. When an image of the spatially generated granular speck pattern is captured from a position close to the object, the granular speck pattern appears small, but increases in size (decreases in brightness) further from the object. Consequently, the laser interference fringe of a holographic image is different than that of a granular speck pattern.

Therefore, the system of the Cuche et al. '818 patent requires a planar beam and the system of Hiyoshi only includes a point beam, such that the items added to the system of Hiyoshi as set forth in the Office Action would not perform any of the functions of the Cuche et al. '818 patent because there would be no planar beam. Accordingly, there is no suggestion or motivation for combining Hiyoshi and the Cuche et al. '818 patent (with or without a combination of the Miyagawa '697 patent) because any combination of the two systems would not result in a system that would allow "computed video animation" and/or "measure a deformation of the object" and/or measure "movement of the object" and/or allow "a modification of the optical properties of the object." Therefore, there is no suggestion or motivation, either in the references themselves or to the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings as set forth in the Office Action.

Additionally, there is no suggestion or motivation or combining the Miyagawa '697 patent with Hiyoshi and/or the Cuche et al. '818 patent. The Miyagawa '697 patent is drawn to a device for placing dates on film in a typical commercial camera. A camera body 12 of the camera includes a light shielding tube 17 located between lenses and film 24. The light shielding tube 17 is positioned to prevent light from entering through a side of the area between the lenses and the film 24 to prevent undesirable exposure of the film 24. However, since Hiyoshi does not disclose any camera having film that could be undesirably exposed without the addition of any light shielding tube as disclosed in the Miyagawa '697 patent, there is no suggestion or motivation for adding any light shield from the Miyagawa '697 patent to any item of Hiyoshi and/or the Cuche et al. '818 patent. Therefore, there is no suggestion or

Applicant : Kenichiro Kobayashi et al.
Appl. No. : 10/737,336
Page : 10

motivation, either in the references themselves or to the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings as set forth in the Office Action. Accordingly, claims 1-13 are in condition for allowance.

In regard to the third criterion of obviousness, even if there was a suggestion or motivation for combining Hiyoshi, the Cuche et al. '818 patent and the Miyagawa '697 patent, any resulting combination would not include all of the claimed features.

Claim 1 defines a method for direct image pick-up of a particular granular speck pattern generated by reflecting light of a laser beam depending on a degree of roughness of the surface of an object to be inspected including, among other things, irradiating the object to be inspected with the laser beam, directly picking up the granular speck pattern in a relatively well lighted environment using a lensless video camera having a CCD (Charge Coupled Device) element incorporated in the video camera, and providing a shielding tube coupled to the camera to shield extraneous light rays.

The prior art of record does not disclose or suggest the above-noted features of claim 1. Specifically, none of the references cited to reject the claims include a lenseless video camera or directly picking up a granular speck pattern in a relatively well lighted environment. According to the Office Action, Hiyoshi teaches "directly picking up said granular speck pattern in a relatively well lighted environment using a lenseless camera having a CCD (Charge Coupled Device) element incorporated in said camera." However, environmental conditions are not indicated clearly in Hiyoshi. In Hiyoshi, there is no statement whatsoever indicating that an image of the granular speck pattern is picked up directly using no lens and in a relatively well lighted environment. Therefore, according to the system show in Fig. 1 of Hiyoshi, the environmental condition required for direct image pick-up of the granular speck pattern of the laser reflection light (laser speck pattern) must be a dark room or an environment similar to a dark room as this is the only manner used in the prior art and the system of Hiyoshi requires a dark room. This image pick-up method performed in a dark room is a typical, conventional method. A CCD camera is illustrated in Fig. 1, and there is no particular description relating to the CCD camera. Therefore, judging from a conventional image pick-

Applicant : Kenichiro Kobayashi et al.
Appln. No. : 10/737,336
Page : 11

up method, the CCD camera is presumed to be a typical lens-comprising camera.

Accordingly, Hiyoshi does not disclose a well lighted environment or a lenseless camera.

Furthermore, the Cuche et al. '818 patent does not disclose a lensless camera or a well lighted environment. The sections of the Cuche et al. '818 patent cited in the Office Action state nothing about a lensless camera or a well lighted environment, much less any elements that could be used with a single laser beam as disclosed and required by Hiyoshi.

Finally, the Miyagawa '697 patent does not disclose a well lighted environment or a lenseless camera. Accordingly, even if there was a suggestion or motivation for combining Hiyoshi, the Cuche et al. '818 patent and the Miyagawa '697 patent, any resulting combination would not include all of the above claimed features of claim 1. Therefore, claim 1 is in condition for allowance. Furthermore, claim 8 depends from claim 1, and since claim 1 defines unobvious patentable subject matter, claim 8 defines patentable subject matter. Therefore, both claims 1 and 8 are in condition for allowance.

Claim 2 defines an apparatus for direct image pick-up of a particular granular speck pattern generated by reflecting light of a laser beam depending on a degree of roughness of the laser beam irradiated surface of an object to be inspected including, among other things, a lensless video camera having a CCD element incorporated in the video camera, and a shielding tube coupled to the camera for shielding extraneous light rays.

The prior art of record does not include all of the above noted features of claim 2. Specifically, the prior art of record does not disclose a lensless video camera as discussed above in regard to claim 1. Accordingly, claim 2 is in condition for allowance. Furthermore, claim 9 depends from claim 2, and since claim 2 defines unobvious patentable subject matter, claim 9 defines patentable subject matter. Therefore, both claims 2 and 9 are in condition for allowance.

Claim 3 defines a method for direct image pick-up of a particular granular speck pattern generated by the transmitted light of a laser beam diffusively reflecting depending on a degree of roughness of the laser beam irradiated onto the surface of an object to be inspected or shapes of fine ingredients constituting the object to be inspected, the method including irradiating the object to be inspected with the laser beam, directly picking up the granular

Applicant : Kenichiro Kobayashi et al.
Appln. No. : 10/737,336
Page : 12

speck pattern in a relatively well lighted environment using a lensless video camera having a CCD element incorporated in the video camera, and providing a shielding tube coupled to the camera to shield extraneous light rays.

The prior art of record does not include all of the above noted features of claim 3. Specifically, the prior art of record does not disclose a lensless video camera or a relatively well lighted environment as discussed above in regard to claim 1. Accordingly, claim 3 is in condition for allowance. Furthermore, claim 11 depends from claim 3, and since claim 3 defines unobvious patentable subject matter, claim 11 defines patentable subject matter. Therefore, both claims 3 and 11 are in condition for allowance.

Claim 4 defines an apparatus for direct image pick-up of a particular granular speck pattern generated by transmitted light of a laser beam diffusively reflecting depending on a degree of roughness of the laser beam irradiated surface of an object to be inspected or on shapes of fine ingredients constituting the object to be inspected, the apparatus comprising a commercially available video camera having a CCD image detector and deprived of its image forming lens, and a shielding tube coupled to the camera to shield extraneous light rays from striking the CCD of the camera.

The prior art of record does not include all of the above noted features of claim 4. Specifically, the prior art of record does not disclose a video camera having a CCD image detector and deprived of its image forming lens as discussed above in regard to claim 1. Accordingly, claim 4 is in condition for allowance. Furthermore, claim 10 depends from claim 4, and since claim 4 defines unobvious patentable subject matter, claim 10 defines patentable subject matter. Therefore, both claims 4 and 10 are in condition for allowance.

Claim 6 defines a method for direct image pick-up of a particular granular speck pattern generated by the transmitted light of a laser beam diffusively reflecting depending on a degree of roughness of the laser beam irradiated onto the surface of an object to be inspected or shapes of fine ingredients constituting the object to be inspected, the method comprising irradiating the object to be inspected with a laser beam, directly picking up the granular speck pattern in a relatively well lighted environment using a lensless digital camera having a CCD

Applicant : Kenichiro Kobayashi et al.
Appln. No. : 10/737,336
Page : 13

element incorporated in the camera, and providing a shielding tube coupled to the camera to shield extraneous light rays.

The prior art of record does not include all of the above noted features of claim 6. Specifically, the prior art of record does not disclose a lensless digital camera or a relatively well lighted environment as discussed above in regard to claim 1. Accordingly, claim 6 is in condition for allowance.

Claim 7 defines an apparatus for direct image pick-up of a particular granular speck pattern generated by transmitted light of a laser beam diffusively reflecting depending on a degree of roughness of the laser beam irradiated surface of an object to be inspected or on shapes of fine ingredients constituting the object to be inspected, the apparatus comprising a lensless video camera having a CCD image detector for receiving light directly onto the CCD, and a shielding tube coupled to the camera to shield extraneous light rays from striking the CCD of the camera.

The prior art of record does not include all of the above noted features of claim 7. Specifically, the prior art of record does not disclose a lensless video camera as discussed above in regard to claim 1. Accordingly, claim 7 is in condition for allowance. Furthermore, claim 13 depends from claim 7, and since claim 7 defines unobvious patentable subject matter, claim 13 defines patentable subject matter. Therefore, both claims 7 and 13 are in condition for allowance.

Claims 14-17 have been rejected as being unpatentable over Hiyoshi in view of U.S. Patent No. 3,739,697 to Miyagawa. The requirements for making a *prima facie* case of obviousness are described in MPEP §2143 as follows:

In order to establish a *prima facie* case of obviousness, three criteria must be met. M.P.E.P. § 706.02(j). Firstly, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Secondly, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Thirdly, the prior art reference (or references) must teach or suggest all the claim limitations. *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Applicant : Kenichiro Kobayashi et al.
Appln. No. : 10/737,336
Page : 14

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on

applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

MPEP §2143.01 provides further guidance as to what is necessary in showing that there was motivation known in the prior art to modify a reference teaching. Specifically, MPEP §2143.01 states:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. *In re Fritch*, 23 USPQ 2d 1780, 1783 (Fed. Cir. 1992); M.P.E.P. §2142. Applicants respectfully assert that the Examiner has not yet met the Examiner's burden of establishing a prima facie case of obviousness with respect to the rejected claims. Consequently, the Examiner's rejection of the subject claims is inappropriate, and should be withdrawn.

In regard to the first criterion of obviousness, there is no suggestion or motivation, either in the references themselves or to the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings. Specifically, there is no suggestion or motivation or combining the Miyagawa '697 patent with Hiyoshi. The Miyagawa '697 patent is drawn to a device for placing dates on film in a typical commercial camera. A camera body 12 of the camera includes a light shielding tube 17 located between lenses and film 24. The light shielding tube 17 is positioned to prevent light from entering through a side of the area between the lenses and the film 24 to prevent undesirable exposure of the film 24. However, since Hiyoshi does not disclose any camera having film that could be undesirably exposed without the addition of any light shielding tube as disclosed in the Miyagawa '697 patent, there is no suggestion or motivation for adding any light shield from the Miyagawa '697 patent to any item of Hiyoshi. Therefore, there is no suggestion or motivation, either in the references themselves or to the knowledge generally available to one of ordinary skill in the art, to

Applicant : Kenichiro Kobayashi et al.
Appln. No. : 10/737,336
Page : 15

combine the reference teachings as set forth in the Office Action. Accordingly, claims 14-17 are in condition for allowance.

In regard to the third criterion of obviousness, even if there was a suggestion or motivation for combining Hiyoshi and the Miyagawa '697 patent, any resulting combination would not include all of the claimed features.

Claim 14 defines a method for direct image pick-up of a particular granular speck pattern generated by reflecting light of a laser beam depending on a degree of roughness of the surface of an object to be inspected, the method comprising irradiating the object to be inspected with the laser beam, directly picking up the granular speck pattern in a relatively well lighted environment using a lensless camera, and providing a shielding tube coupled to the camera to shield extraneous light rays.

The prior art of record does not include all of the above noted features of claim 14. Specifically, the prior art of record does not disclose a lensless camera or a relatively well lighted environment as discussed above in regard to claim 1. Accordingly, claim 14 is in condition for allowance.

Claim 15 defines an apparatus for direct image pick-up of a particular granular speck pattern generated by reflecting light of a laser beam depending on a degree of roughness of the laser beam irradiated surface of an object to be inspected, the apparatus comprising a lensless camera and a shielding tube coupled to the camera for shielding extraneous light rays.

The prior art of record does not include all of the above noted features of claim 15. Specifically, the prior art of record does not disclose a lensless camera as discussed above in regard to claim 1. Accordingly, claim 15 is in condition for allowance.

Claim 16 defines a method for direct image pick-up of a particular granular speck pattern generated by the transmitted light of a laser beam diffusively reflecting depending on a degree of roughness of the laser beam irradiated onto the surface of an object to be inspected or shapes of fine ingredients constituting the object to be inspected, the method comprising irradiating the object to be inspected with the laser beam, directly picking up the granular speck pattern in a relatively well lighted environment using a lensless camera, and providing a shielding tube coupled to the camera to shield extraneous light rays.

Applicant : Kenichiro Kobayashi et al.
Appln. No. : 10/737,336
Page : 16

The prior art of record does not include all of the above noted features of claim 16. Specifically, the prior art of record does not disclose a lensless camera or a relatively well lighted environment as discussed above in regard to claim 1. Accordingly, claim 16 is in condition for allowance.


Claim 17 defines a method for direct image pick-up of a particular granular speck pattern generated by the transmitted light of a laser beam diffusively reflecting depending on a degree of roughness of the laser beam irradiated onto the surface of an object to be inspected or shapes of fine ingredients constituting the object to be inspected, the method comprising irradiating the object to be inspected with a laser beam, directly picking up the granular speck pattern in a relatively well lighted environment using a lensless camera, and a shielding tube coupled to the camera to shield extraneous light rays.

The prior art of record does not include all of the above noted features of claim 17. Specifically, the prior art of record does not disclose a lensless camera or a relatively well lighted environment as discussed above in regard to claim 1. Accordingly, claim 17 is in condition for allowance.

Applicant has made a concerted effort to the place the present application in condition for allowance, and a Notice to this effect is earnestly solicited. In the event there are any remaining informalities, the courtesy of a telephone call to the undersigned attorney would be appreciated.

Respectfully submitted,

7/5/05
Date



Marcus P. Dolce
Registration No. 46 073
Price, Heneveld, Cooper, DeWitt & Litton, LLP
695 Kenmoor, S.E.
Post Office Box 2567
Grand Rapids, Michigan 49501
(616) 949-9610

MPD/cmu/msj